What is claimed is:

1. A system for enclosing a biological insert, such as cells or tissue, for positioning within a selected ambient medium, the method comprising:

enclosing a selected biological insert in a cage or envelope of a cage material that includes primarily carbon nanotube Bucky paper ("CNTBP"), having a selected cage thickness, where an interior of the cage is substantially isolated from an ambient medium surrounding the cage, except for transport of at least one selected molecule between the cage interior and the ambient medium.

2. The system of claim 1, wherein said cage is used to grow said biological insert without provoking a substantial immunological response from said ambient medium.

3. The system of claim 1, wherein said cage is used to place cells derived from a selected cell culture into a selected host without provoking a substantial immunological response from said ambient medium.

4. The system of claim 1, wherein said cage is used to place at least one of a bacterial cell, a yeast cell, a mammalian cell and a non-mammalian cell into a selected host without provoking a substantial immunological response from said ambient medium.

5. The system of claim 1, wherein said biological insert includes at least one cell that is capable of cell differentiation and said cage promotes cell differentiation by the at least one cell without provoking a substantial immunological response from said ambient medium.

6. The system of claim 1, wherein said cage is modified by addition of a selected active biological substance to an interior of said cage.

7. The system of claim 6, wherein said active biological substance is selected to be at least one of a protein, a peptide, a polypeptide, a growth factor, a cytokine, a nucleic acid and a nucleic acid polymer.

8. The system of claim 6, wherein said active biological substance is added to said cage interior by at least one of non-specific adsorption, covalent coupling and chemical cross-linking so that said active biological substance becomes entangled with said CNTBP cage material.

9. The system of claim 6, wherein said active biological substance is added to said cage interior by attachment to a selected bead so that the bead and said attached active biological substance cannot be transported from inside said cage to outside said cage.

10. The system of claim 6, wherein said cage interior, modified by said addition of said active biological substance enhances at least one process of growth, differentiation, de-differentiation, assembly into a two-dimensional cell structure, and assembly into a three-dimensional cell structure, of said biological insert.

11. The system of claim 1, wherein said cage is modified by addition of a selected active biological substance to an exterior of said cage.

12. The system of claim 11, wherein said active biological substance is selected to be at least one of a protein, a peptide, a polypeptide, a growth factor, a cytokine, a nucleic acid and a nucleic acid polymer.

13. The system of claim 11, wherein said cage exterior, modified by said addition of said active biological substance enhances immune shielding by said cage.

14. The system of claim 1, wherein said biological insert includes at least one cell that is capable of cell differentiation and said cage suppresses cell differentiation by the at least one cell without provoking a substantial immunological response from said ambient medium.

15. The system of claim 1, wherein said cage is used to transplant said biological insert from a first organism to a second organism without provoking a substantial immunological response from at least one of the first organism and the second organism.

16. The system of claim 1, wherein said cage is used to transplant said biological insert from a first region of a host body to a second regioon of the host body without provoking a substantial immunological response from the host body.

17. The system of claim 1, wherein said cage has at least two adjacent layers of said CNTBP material and substantially has a shape drawn from a class of cage shapes consisting of a cylinder, a torus and a multiple-sheet structure.

18. The system of claim 1, wherein said cage is chemically modified by addition of at least one of a hydride, a nitride, an oxide, a halide, a sulfide, a protein, and a peptide to said cage material.

19. A system for providing secretion of an active biological substance into a selected ambient medium, the system comprising:

a selected active biological substance enclosed in a cage or envelope of a cage material that includes primarily carbon nanotube Bucky paper ("CNTBP"), having a selected cage thickness, where an interior of the cage is substantially isolated from an ambient medium located in an exterior of the cage, except for transport of at least one selected molecule between the cage interior and the cage exterior, and where the active biological substance has a positive rate of transfer across the cage material from the cage interior to the cage exterior.

20. The system of claim 19, wherein said cage further encloses at least one of a thyroid tissue or portion of a thyroid gland and said cage permits transfer of thyroid hormone or other iodine-containing compound from inside said cage to outside said cage.

21. The system of claim 19, wherein said cage further encloses at least one of a pancreas tissue or portion of a pancreas gland and said cage permits transfer of pancreas hormone or other insulin-containing compound from inside said cage to outside said cage.

22. The system of claim 19, wherein said cage is chemically modified by addition of at least one of a protein, a peptide and a molecule including at least one of a hydrogen atom, an oxygen atom, a nitrogen atom, a sulfur atom, a fluorine atom, a chlorine atom, a bromine atom and an iodine atom to said cage material.

23. A method for providing secretion of an active biological substance into a selected ambient medium, the method comprising:

enclosing a selected active biological substance, having a capability of secreting a selected chemical and having a selected active substance first concentration, in a first cage or envelope of a first cage material that includes primarily carbon nanotube Bucky paper ("CNTBP"), having a selected cage

thickness, where the active biological substance has a positive rate of transfer across the first cage material from a first cage interior to a first cage exterior; and

enclosing the active biological substance, having a selected active substance second concentration, in a second cage or envelope of a second cage material, having a selected second cage thickness, where an interior of the second cage is contained within the first cage and where the active biological substance within the second cage has a positive rate of transfer across the second cage material from a second cage interior to the first cage interior.

24. The method of claim 23, further comprising enclosing within said second cage at least one of a thyroid tissue and a portion of a thyroid gland.

25. The method of claim 23, further comprising enclosing within said second cage at least one of a pancreas tissue and a portion of a pancreas gland.

26. The method of claim 23, further comprising chemically modifying said cage by addition of at least one of a protein, a peptide and a molecule including at least one of a hydrogen atom, an oxygen atom, a nitrogen atom, a sulfur atom, a fluorine atom, a chlorine atom, a bromine atom and an iodine atom to said cage material.

27. A method for monitoring at least one of presence and concentration of an active biological substance in a selected ambient medium, the method comprising:

enclosing a selected monitoring substance, which reacts with a selected monitored substance and undergoes at least one of a chemical change and a physical change, in a cage or envelope of a cage material that includes primarily carbon nanotube Bucky paper ("CNTBP"), the cage having a selected cage thickness, where an interior of the cage is substantially isolated from an ambient

medium located in an exterior of the cage and where the monitored substance has a positive rate of transfer across the cage material between a cage exterior and a cage interior; and

when the monitoring substance undergoes at least one of the chemical change and the physical change, the system interprets this condition to indicate that the monitored substance is present in the ambient medium.

28. The system of claim 27, further comprising estimating a degree to which said monitoring substance undergoes at least one of said chemical reaction and said physical reaction and interprets this degree as indicating a concentration of said monitored substance in said ambient medium.

29. The method of claim 27, further comprising chemically modifying said cage by addition of at least one of a protein, a peptide and a molecule including at least one of a hydrogen atom, an oxygen atom, a nitrogen atom, a sulfur atom, a fluorine atom, a chlorine atom, a bromine atom and an iodine atom to said cage material.

30. A method for controlling activity of a biological insert in a host body, the method comprising:

enclosing a selected biological insert, initially in an inactive state in a cage or envelope of a cage material that includes primarily carbon nanotube Bucky paper ("CNTBP"), the cage having a selected cage thickness, where an interior of the cage is substantially isolated from an ambient medium located in an exterior of the cage; and

at a selected time, administering a selected triggering agent to at least one of the ambient medium and the cage interior to activate the biological insert and to permit at least part of the activated biological insert to pass from the cage interior to ambient medium

31. The method of claim 30, further comprising administering, at a second selected time subsequent to said first selected time, a second selected triggering agent to at least one of said ambient medium and said cage interior to deactivate said activated biological insert that is located in at least one of said cage interior and said ambient medium.

32. The method of claim 30, further comprising chemically modifying said cage by addition of at least one of a protein, a peptide and a molecule including at least one of a hydrogen atom, an oxygen atom, a nitrogen atom, a sulfur atom, a fluorine atom, a chlorine atom, a bromine atom and an iodine atom to said cage material.

33. A method for providing a medical device within a host body, the method comprising:

enclosing a selected medical device in a cage or envelope of a cage material that includes primarily carbon nanotube Bucky paper ("CNTBP"), having a selected cage thickness, where an interior of the cage is substantially isolated from an ambient medium surrounding the cage, except for transport of at least one selected molecule between the cage interior and the ambient medium, where the cage material acts as a shield to prevent selected molecules in the ambient medium from contacting the device;

when the medical device is initially inactive, providing a medical device activation signal that activates the device at a selected activation time; and

when the medical device is initially active, providing a medical device inactivation signal that inactivates the device at a selected inactivation time.

34. The method of claim 33, further comprising selecting said medical device to be a nano-device that provides or transforms at least one of a selected chemical and a selected signal within said cage.

35. The method of claim 33, further comprising selecting said medical device to be a macroscopic device that provides or transforms at least one of a selected chemical and a selected signal within said cage.

36. The method of claim 33, further comprising providing at least one of said activation signal and said inactivation signal as at least one of a chemical signal, an optical signal, an electronic signal, an electromagnetic signal, an ultrasound signal and a mechanical signal that is initially produced outside said cage, passes through said cage material, and interacts with said medical device.

37. The method of claim 33, further comprising:

when said medical device is initially active, providing a medical device control signal that changes at least one operating parameter for said medical device at a selected control time.

38. The method of claim 37, further comprising providing at least one of said activation signal and said inactivation signal as at least one of a chemical signal, an optical signal, an electronic signal, an electromagnetic signal, an ultrasound signal and a mechanical signal that is initially produced outside said cage, passes through said cage material, and interacts with said medical device.